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Expert Group on Training Problems

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INTRODUCTION

1. As part of the Consultation Meetings on the Iron and Steel Industry, an Expert Group on Training Problems met in Vienna from 24 to 26 April 1978. The Expert Group's first meeting was held in January 1978.

2. The meeting was opened with an introductory statement by B.R. Nijhawan, a UNIDO staff member and Chairman of the Iron and Steel Task Force. He welcomed the participants and said that they would be considering a number of points that had emerged from the Expert Group's first meeting. He introduced W.L. Hewlett, the UNIDO co-ordinator of the current meeting.

3. The agenda is given in annex I. A list of participants appears in annex II and the documents presented at the meeting, in annex III.

I. SUMMARY OF THE DISCUSSION ON EDUCATIONAL AND MANPOWER REQUIREMENTS

Agenda item 2

4. The statistics provided by UNESCO were compared with the calculated requirements of the steel industry in developing countries for qualified recruits at the various educational levels. It was agreed that the figures were subject to variation within a wide range. The paper's general conclusions appeared to be, however, that the developing countries would be able to draw on sufficient numbers of educated people to meet their requirements in the year 2000. Nonetheless, practical factors such as lack of infrastructure and an inadequate social environment at newly established plants could create difficulties in many countries in attracting enough able people.

5. UNESCO was invited:

(a) To provide estimates, for the years up to 2000, of the number of persons at the educational level below that shown in tables 7 and 8 of the UNESCO paper. The intention was to compare these estimates with the requirements for secondary school graduates (16 year-olds) for craftsman and process training (table IV, ID/WG.276/3);

(b) To prepare a note for circulation at the Second Consultation Meeting on the Iron and Steel Industry emphasizing the importance of the general education policies of developing countries for assessing the educational requirements of their steel industries.

Agenda item 3

6. Participants commented on their experience in organizing training programmes for a number of developing countries in recent years, referring particularly to Brazil, Mexico, Nigeria, Peru and the Republic of Korea. They

pointed out that the steel productivity figure assumed for the calculation of manpower requirements was a critical element. If judged by some steel development schemes recently completed or in progress, the figure of 250 tons per man/year was a reasonable target although figures at existing plants varied widely and in some countries were very low.

7. Another factor influencing the calculation of requirements was the expected loss of trained men from the steel industry. In countries with rapidly developing economies, the loss could be high in the case of persons trained abroad. In some countries such losses were limited by a system of contractual bonds by which individuals undertook to remain in the steel industry for a specified period after their training. The social infrastructure created at a new works, the conditions of work and the system of payment for trained individuals also affected their willingness to stay in the industry.

8. In order to meet future manpower requirements, a steel industry project should be planned so that close co-operation would be ensured with institutes and universities, including the sponsoring of post-graduate training and adaptation programmes for talented graduates for the top management and technical positions.

9. In the early years of the establishment of a steel industry, managers and engineers would have to be trained abroad for extended periods. As the industry became established, some of the staff at this level would still need to be sent abroad regularly for refresher courses and senior study tours.

10. The Expert Group agreed that the many individual figures quoted in the discussion relating to existing training schemes would need study and consideration. They would be taken into account in calculating the increasing number of people requiring training by the year 2000.

11. To make the educational system more effective in providing the iron and steel industry with engineers and scientists, substantial scholarships should be made available by Governments and steel-producing companies, with the aim of attracting gifted individuals to the iron and steel industry.

Agenda item 4

12. In a discussion of the problems likely to arise in planning the training needs of individual steel projects, it was emphasized that the assessment of manpower requirements should be one of the first tasks to be carried out

because of the time needed to complete the educational process. The phasing of the training programme needed to be matched closely with the progress of the project.

13. The manpower required for a new project could be trained partly by the overseas companies supplying the steelworks plant or providing consultancy services, partly by other industrial firms in the developing country concerned and partly by the use of facilities on the site of the project itself. On-site training would be of major importance regardless of the contribution of the other two sources. Training in the actual operation of the equipment to be installed was essential in any programme.

14. The use of other industrial firms to train craftsmen for the steel industry would permit a saving in the capital cost of new facilities in the steelworks. It was most important, however, that the external training programmes should be worked out in great detail and monitored effectively.

Agenda item 5

15. It was agreed that adequate facilities were needed to provide continuing training at all existing steelworks. This might appear less attractive than training for a new project but it was essential in order to maintain operational efficiency. Training intended to upgrade staff should be emphasized in this context.

16. For refresher and retraining purposes it was more effective to take staff away from their jobs for short periods and give them the necessary instruction than to expect them to absorb a new technique while performing a regular task.

17. The Expert Group stressed the importance of making individuals aware of the need for continued training, especially when advancement was governed primarily by seniority.

18. In preparing engineers for high-level technical and management positions it would be necessary for some developing countries to train up to 50 per cent more than the normal staffing indicated in order to provide for the movement of trained persons to other industries.

Agenda items 6 and 7

19. Several participants referred to the full-time courses for middle management provided by steel industry colleges in, for example, Japan and the United Kingdom. To make the establishment of such colleges practical, a minimum number

of employees was needed from which to draw suitable candidates. Developing countries might co-operate regionally to establish colleges of this type.

20. Other participants drew attention to possible difficulties in establishing regional centres owing to differences in labour conditions and company structures. It might therefore be necessary to limit the course of study to production management. Numerous examples were cited of successful bilateral co-operation between countries in all forms of steel industry training as an alternative to regional centres.

21. Provisions concerning the training of manpower, including in-plant training, should be an essential part of contracts for the delivery and construction of iron and steel plants. The recent tendency to set up management contracts for a new steel works had increased the importance of training local staff who would be able gradually to take over the running of the plant.

Agenda item 8

22. It was recognized that although the cost of training the manpower needed for a new steel development scheme might appear large it represented a small proportion of the total cost of the scheme. Delays in start-up caused by inadequate training would cost a plant much more than an efficient training programme. It was therefore re-emphasized that in planning and executing any development scheme, high priority should be assigned to the training needed to enable a plant to begin operations and work up to full capacity within as short a time as possible.

II. RECOMMENDATIONS

23. To assist developing countries in giving proper attention to training problems, UNIDO should:

(a) Compile and disseminate information on training establishments and training courses within the steel industry throughout the world;

(b) Establish contacts in developed and developing countries with training facilities that could be used for the in-plant training required by steel industries in developing countries;

(c) Encourage regional steel-industry institutes to create centres for training management in the steel industry and assist by drawing up an outline of the organization of such centres;

(d) Give advice on the sources of funds for establishing training centres, and assist in the provision of funds for in-plant and other current training programmes;

(e) Recommend to Governments at the next Consultation Meeting that they match educational plans with the requirements of the steel industry both in terms of the quantity and quality of educated manpower.

Annex I

AGENDA

1. Introductory statement by B.R. Nijhawan, Chairman of the Iron and Steel Task Force.

2. Review UNESCO estimates of educational prospects in 1985 and 2000 in comparison with the needs for qualified manpower.

3. Relate the size and scope of the possible training needs in 1985 and 2000 to the programme of training undertaken in and for developing countries in 1977, referring to what was being done, by whom and where.

4. Given that for the expansion of the steel industry in developing countries to the 1985 and 2000 targets the training requirements related to individual projects must be planned as an integral part of each project, assess what specific problems are likely to emerge in providing for those requirements, with regard to numbers, types of facility, staff and location.

5. Consider if and what additional training facilities would be needed for the regular intake of replacement manning, retraining and refresher training, in the developing countries in 1985 and 2000, relating to craftsmen for maintenance and other skilled work, process workers, engineers, scientists, administrators, and managers.

6. Assess the scope for meeting some or all of the foregoing needs by way of regional or other combined training centres.

7. Estimate what contribution towards any of the training needs could be expected from training establishments in the developed countries.

8. Summarize proposed courses of action, indicating what needs to be done, by whom and where.

Annex II

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Annex III

LIST OF DOCUMENTS

ID/WG.276/1	Provision agenda
ID/WG.276/2	Note on in-plant group training programmes for engineers and technicians in the iron and steel industry arranged by UNIDO in USSR in 1977 UNIDO secretariat
ID/WG.276/3	Note on educational needs and alternative illustrations of training requirements UNIDO secretariat
ID/WG.276/4	Provisional list of participants

A case study on SIDERPERU expansion training
Benedict L. Fernandez

Outline of Iron and Steel Technical College of Japan
Nippon Steel Corporation

Technical guidance extended to USIMINAS under the first-phase technical assistance agreement
Nippon Steel Corporation

Tentative projections of supply of high-level manpower in 1987 and 2000
R.R. Iyer and J. Letouzey (UNESCO)